SYSTEM PERFORMANCE TESTING PROCEDURE FOR POST-TENSIONING STRAND ANCHORAGE SYSTEMS

The PT System Application must be approved by the Department before scheduling system performance testing. The system performance test is to be witnessed by representatives of the Department and must meet acceptance criteria outlined in this document for inclusion on the Department's Authorized Materials List.

1. TEST BLOCK CONFIGURATION

For each system, test block dimensions and placement of internal components and reinforcing steel must be verified with the approved submittal by a Caltrans inspector prior to concrete placement. All reinforcing steel shall conform to the requirements of ASTM A706, Grade 60.

2. CONCRETE PLACEMENT AND CURING

Place concrete following the normal procedures, vibrating well around anchorage components. Take a minimum of 20 cylinders for testing. Cylinders are to be cured alongside of and in the same manner as the test block. Three cylinders are to be taken to an independent test lab and tested on the morning after the concrete has been placed. Three additional cylinders are to be taken each succeeding day until the desired concrete strength is reached.

The concrete strength of the test block must be within ±500 psi of the minimum concrete strength specified in the submittal on the day of the system test. A certified report of the cylinder breaks must be provided prior to testing.

3. SYSTEM TEST

Safety Precautions:

- Before stressing, the contractor should check high-pressure hoses and equipment for any damage or leakage.
- Stay clear of the anchorage area during stressing. Never stand behind the pre-stressing jack during the stressing operation.

Each anchorage system will be individually tested as follows:

a. Check surface flatness of bearing plate and/or anchor head at the dead end prior to placement by using a point-to-point spanner with a center mounted dial indicator. Record the initial value.

b. Contractor shall install strand, anchor head, Caltrans load cell, and stressing equipment on the test block per the approved submittal.

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c. Contractor to individually stress strands to approximately 5 kips and release in order to seat the wedges and equally distribute loading.

d. Contractor shall apply force to the system in stages:

   i. Apply initial force of 50% GUTS, record gauge pressure, and hold for three minutes to allow inspection for cracks on the test block. Record crack width and pattern observations; crack widths shall not exceed 0.002 in.

   ii. Continue stressing to a force of 75% GUTS, record gauge pressure and hold for three minutes. Record crack width and pattern observations; crack widths shall not exceed 0.010 in.

   iii. Continue stressing to 95% GUTS and hold for three minutes and record gauge pressure. The test block and/or tendon assemblies shall not fail prior to and while maintaining 95% GUTS.

   iv. De-tension back down to 75% GUTS and hold for three minutes. Record crack width and pattern observations; crack widths shall not exceed 0.010 in.

e. The contractor shall completely de-tension tendons and remove the anchor head at the dead end.

f. Check for permanent deflection on the anchor head with the point-to-point spanner and center mounted dial indicator; record the final value. Deflection shall not exceed 1/600th of clear span.

g. Remove wedges from tendons and evaluate. Longitudinal surface cracks are acceptable; transverse surface cracks or wedges that have broken off into pieces are not acceptable.

Failure to meet any of the criteria outlined above is cause for rejection of the system authorization. Once a PT system is authorized, any marked variations from the original test setup without authorization from the Department will result in removal from the Authorized Materials List.